

Claims

- [1] 1. A Ziegler-Natta catalyst for olefin polymerization, which is produced by a method comprising a step of reacting a transition metal compound having a general formula of $MX_{p(q+r)}(OAr_1)_q(OAr_2)_r$, with an organomagnesium compound having a general formula of $MgX_{2-m}R_m$, wherein M represents a transition metal having an oxidation number of 4 or more, selected from Groups IV, V or VI of the Periodic table; X represents a halogen atom; Ar₁ and Ar₂ each represents substituted or unsubstituted aryl group of 6 to 30 carbon atoms, in which the Ar₁ and Ar₂ are not linked to each other; p represents the oxidation number of M of 4 or more; q and r satisfy 0 ≤ q ≤ p, 0 ≤ r ≤ p and 2 ≤ q+r ≤ p; R represents an alkyl group of 1 to 16 carbon atoms; and m satisfies 0 < m ≤ 2.
- [2] 2. The Ziegler-Natta catalyst for olefin polymerization according to claim 1, wherein the transition metal compound and the organomagnesium compound are reacted at 60-90 °C with a molar ratio of 0.1 ≤ the transition metal compound/the organomagnesium compound ≤ 0.5.
- [3] 3. A method for olefin polymerization, which comprises carrying out polymerization in the presence of a main catalyst which is a Ziegler-Natta catalyst produced by a method comprising a step of reacting a transition metal compound having a general formula of $MX_{p(q+r)}(OAr_1)_q(OAr_2)_r$, with an organomagnesium compound having a general formula of $MgX_{2-m}R_m$, wherein M represents a transition metal having an oxidation number of 4 or more, selected from Groups IV, V or VI of the Periodic table; X represents a halogen atom; Ar₁ and Ar₂ each represents substituted or unsubstituted aryl group of 6 to 30 carbon atoms, in which the Ar₁ and Ar₂ are not linked to each other; p represents the oxidation number of M of 4 or more; q and r satisfy 0 ≤ q ≤ p, 0 ≤ r ≤ p and 2 ≤ q+r ≤ p; R represents an alkyl group of 1 to 16 carbon atoms; and m satisfies 0 < m ≤ 2, and
 a co-catalyst which is an alkyl aluminum compound having a general formula of $AIR_nX_{(3-n)}$, wherein R represents an alkyl group of 1 to 16 carbon atoms; X represents a halogen atom; and n satisfies 1 ≤ n ≤ 3.
- [4] 4. A method for olefin polymerization according to claim 3, wherein the alkyl aluminum compound is used with a molar ratio of 0.5 ≤ the alkyl aluminum compound /the transition metal compound ≤ 500.